

the meros and carpos, against which apparently it impinges and between which it is received.

Pereiopoda all wanting, except one of the fourth pair (which, on account of its brittleness, went to pieces during dissection), which was about one third as long as the body, and the joints of which were rather slender and were sparingly furnished with short almost spinose setæ.

Pleopoda slender.

First and second uropods reaching nearly to the extremity of the *third pair*. (Unfortunately, owing to the fragile state of the specimen, these appendages were broken up during dissection, so that details could not be satisfactorily settled.)

Telson apparently very short, cleft at the apex, and each side tipped with a very short spine (not well made out).

Length 4 millim.

Hab. Taken with the dredge in about 8 fathoms in the Bay of Islands.

EXPLANATION OF PLATE X.

Figs. 1-5. Mæra Chiltoni.

1. Animal, $\times 20$.

2. Mandible, $\times 125$.

3. Gnathopod of first pair, $\times 56$.

4. Gnathopod of second pair, $\times 56$.

5. Telson and last pair of uropods, $\times 56$.

Figs. 6-10. Mæra Haswelli.

6. Animal, $\times 20$.

7. Base of mandible, $\times 125$.

8. Mandibular palp, $\times 125$.

9. Gnathopod of second pair, $\times 41$.

10. Telson, $\times 56$.

LIII.—*A Revision of the Species of Butterflies belonging to the Genus Teracolus, Swains.* By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

[Continued from p. 399.]

25. *Teracolus Mananhari.*

Pieris Mananhari, Ward, Ent. Month. Mag. vi. p. 224 (1870); Afr. Lep. p. 2, pl. ii. figs. 1-4 (1873).

Anthocharis flavida, P. Mabille, Bull. Soc. Ent. Fr. (5) vii. p. xxxvii (1877).

Teracolus flavidus, P. Mabille, Grand. Madag. pl. xl. figs. 1, 1 a, 2, 2 a (1885).

Teracolus nothus, Mabille, *l. c.* p. 290 (1886)*.

Madagascar.

* M. Mabille quotes pl. xxxvi. a. fig. 2, but no such plate appears to have been published hitherto; at any rate, it is not in the Museum Atlas to the work.

Ward described the wet-season form (which is largest) with almost plain yellow under surface in the male, about two black spots in the primaries and an orange costal streak to the secondaries being the only markings on that surface; in the female the apical area of the primaries and the secondaries are buff on the under surface, the former with a subapical black bar representing the inner boundary of the black border of the upper surface and a discocellular black spot, the latter often with a slender interrupted angular discal stripe. *T. nothus* is represented by two intermediate forms, which occur in both sexes. The first has the under-surface pattern of *T. Mananhari* (typical), but the apex of the primaries and the secondaries are washed with rosy sienna; the second is slightly less reddish below, but has the addition of a longitudinal brown stripe through the centre of the secondaries; the female also has indications of striations on these wings. *T. flavida* is a smaller form in which the striation of the under surface appears in the male, but the angular band in that sex and the subapical band in the female are obsolete. Finally, there is a true dry-season form of which we possess the male only; it is small, the apex of primaries and the secondaries below fleshy buff, indistinctly striated, but without longitudinal streak or angular discal stripe.

26. *Teracolus incretus*.

- ♀. *Teracolus incretus*, Butler, Ent. Month. Mag. xviii. p. 146 (1881).
 ♂. *Callosune vulnerata*, Staudinger, Exot. Schmett. p. 46, pl. xxiii. (1884).

Ranges from the Victoria Nyanza southwards to Nyasa and eastwards to Mombasa and Bagomoyo.

Both types of the species are undoubtedly sexes of the wet-season form; the bad colouring of Staudinger's figure led Mr. Marshall to suppose that *T. vulnerata* was "clearly the dry-season form," but he is mistaken, for we have the latter. It is very rosy beneath, the male having the apical half and the secondaries, excepting towards apex, fleshy sienna, transversely striated with brown and more or less spotted; there is also frequently a longitudinal dusky streak from the base through the lower half of the discoidal cell in the secondaries.

27. *Teracolus auxo*.

- Anthocharis auxo*, Lucas, Rev. et Mag. de Zool. 1852, p. 422.
Anthopsyche topha, Wallengren, Lep. Rhop. Caffr. p. 15 (1857).
Anthocharis keiskamma, Trimen, Rhop. Afr. Austr. p. 56, pl. ii. figs. 3, 4 (1862-6).

The yellow form of this species appears to be strictly confined to Kaffraria and Natal, but a somewhat paler race occurs in Matabeleland. The extreme types *T. auro* and *keiskamma* were proved by Mansel Weale and recently by Mr. Marshall to be wet- and dry-season forms of one species; *T. topha*, which is usually regarded as identical with *T. keiskamma*, appears to me to be an intergrade of which we possess six examples in the Museum.

Of the Matabele type, which only differs in its somewhat whiter coloration, we only possess males of the wet and intermediate forms.

28. *Teracolus dissociatus*, sp. n.

Allied to *T. auro*, but with whitish or white ground-colour, tinted along edge of apical area with sulphur-yellow. The wet-season form differs also from that of *T. auro* in that the male has a black oblique bar bounding the inner edge of the orange apical patch; the intermediate form* chiefly differs from *T. topha* in its white colouring and the much more limited apical orange patch; the dry-season form differs from *T. keiskamma* in its white colouring and much darker borders, but more especially in the females. In size this species agrees in all its forms with the more southern butterfly.

Ranges from Nyasaland northward by Kilima-njaro to the Victoria Nyanza.

29. *Teracolus evarne*.

Pontia evarne, Klug, Symb. Phys. pl. vi. figs. 1-4 (1829).

Pontia liagore, Klug, l. c. figs. 5-8 (1829).

Teracolus citreus, Butler, P. Z. S. 1876, p. 152.

Teracolus xanthevarne, Butler, t. c. p. 163.

Teracolus syrtinus, Butler, t. c. p. 163.

One of the most widely distributed and variable species of its group, ranging from Upper Egypt and the White Nile to Abyssinia, southwards to the Albert Nyanza, the Victoria Nyanza, and Kilima-njaro, and eastwards to Mombasa. On the western side it appears to be rare, but we have one example (the type of *T. syrtinus*) said to be from "Senegal" and a second recorded as simply from "West Africa." In ground-colour *T. evarne* varies from primrose-yellow to white, the typical form being almost white with yellow diffused bordering to the orange apical area; this is the wet-season form of the species and the most heavily marked with black. *T. xanthevarne* appears to be the prevalent form of the species in

* One of the supposed types of *T. syrtinus* referred to by Messrs. Trimen and Marshall.

Upper Egypt, the White Nile, and Abyssinia, and chiefly differs in its inferior size, yellower colouring, and frequently in the larger orange patch on the primaries. *T. syrtinus* is an intermediate-season form which apparently ranges westwards from Mombasa through the Sabaki valley, past Kilimanjaro and the Victoria Nyanza to Wadelai, and thence across the continent to Senegal, where it varies slightly from the normal form, the lower extremity of the orange apical patch being indistinctly bordered with blackish, so as vaguely to resemble the wet-season form of *T. auxo* (nobody, however, with an eye for species could calmly compare the two and for a moment regard them as identical). The males of this form never have the margin of the secondaries dotted, and on the under surface they show a slight tendency to rosy tinting. The females are altogether more lightly marked than those of typical *T. evarne*. *T. liagore* is probably little more than a rare starved albinism occurring in Egypt and on the borders of the Red Sea; in its weak markings it would seem to be a dry-season form, but the colouring of the under surface is that of the wet-season. I should look upon it as an intermediate form probably occurring just before the rains. *T. citreus* is the dry-season form occurring with typical *T. evarne*, but smaller, much more lightly marked above, and very rosy below.

30. *Teracolus Phillipsi*.

Teracolus Phillipsi, Butler, P. Z. S. 1885, p. 772, pl. xlvii. fig. 11.

Somaliland.

This is a well-defined local representative of *T. evarne* most nearly approaching the varietal form *T. liagore* in character. In all its seasonal phases it is much more lightly marked and paler in colouring than *T. evarne*, as well as slightly smaller than in the corresponding phases of *T. evarne*. The ground-colouring is always white, with the pale orange apical patch very faintly tinted with yellow along the inner edge; the marginal bordering even of the wet-season male is comparatively weak, while the secondaries are always unspotted. The female in the wet-season has the upper surface marked almost as in the dry-season female of *T. evarne*, while the intermediate type, which is much smaller, has the female still less marked above and striated below with greyish olive; the dry-season form is very small, the male without marginal markings, the female very faintly marked, but both sexes rosy and more or less striated below.

31. *Teracolus eucharis*.

Papilio eucharis, Fabricius, Syst. Ent. p. 472 (1775), but not Donovan.

Papilio aurora, Cramer, Pap. Exot. iv. pl. cxcix. figs. A, B (1782).

Euchloe cæneus, Hübner, Verz. bek. Schmett. p. 94 (1816).

Pieris titca, Godart, Enc. Méth. ix. p. 124 (1819).

Teracolus pseudevanthe, Butler, P. Z. S. 1876, p. 164, pl. vii. fig. 16.

Teracolus pallens, Moore, Ann. & Mag. Nat. Hist. ser. 4, vol. xx. p. 49 (1877).

Ranges from Bombay southwards to Madras and Ceylon.

The seasonal forms of this species follow the usual rules, the wet-season forms being heavily marked above, yellowish and white with the usual markings below; the intermediate forms are similar above, but the females show more orange in the apical black patch; the dry-season forms are more lightly marked above and much more rosy and more strongly striated below. Of each form there are two phases, one showing a double bar on the under surface of the male secondaries, the other only showing a costal dash or dot. Of the double-barred type are, first, the wet-season form, which has received no distinctive name; then the intermediate form, representing *T. pseudevanthe*; lastly, the dry-season form, which is typical of *T. eucharis*. Of the costal marked type the wet-season form is again unnamed; the intermediate form is *T. aurora*; and the dry-season form *T. pallens*, which differs from all the other phases in showing no trace of the dusky spot on the inner edge of the orange apical patch in the male.

32. *Teracolus evanthe*.

Anthocharis evanthe, Boisduval, Sp. Gén. Lép. i. p. 567 (1836); Mabille in Grand. Mad. pl. xli. figs. 1, 2 (1887).

Anthocharis ena, Mabille, Bull. Soc. Philom. (7) iii. p. 134 (1879); Grand. Mad. pl. xl. figs. 6, 6a (1887).

Madagascar.

This species appears to have no wet-season form. The variety *T. ena* is perhaps a little drier in character than the type, but both belong to dry-season phases.

33. *Teracolus evanthides*.

Callosune evanthides, Holland, Proc. U. S. Nat. Mus. vol. xviii. p. 268, pl. viii. fig. 9 (1895).

Aldabra, Comoro Islands.

Allied to *C. evanthe*, but evidently distinct. It has the brown irroration and striation of the under surface characteristic of the dry-season *T. evanthe* of Madagascar, but upon a pale yellow ground-tint, whereas in *T. evanthe* the ground-colouring of the under surface is dead white.

34. *Teracolus etrida*.

Anthocharis etrida, Boisduval, Sp. Gén. Lép. i. p. 576 (1836).

Teracolus pernotatus, Butler, P. Z. S. 1876, p. 159, pl. vii. fig. 1.

Teracolus farrinus, Butler, *t. c.* fig. 2.

Teracolus purus, Butler, *t. c.* p. 160, pl. vii. figs. 14, 15.

Teracolus casimirus, Butler, *t. c.* p. 161, pl. vii. fig. 5.

Teracolus bimbura, Butler, *t. c.* p. 161, pl. vii. figs. 3, 4.

Ranges from Persia to N.W. India, and thence through Bombay southwards to the foot of the Nilghiri Hills. I have seen no examples from the eastern side of India. I think that Mr. Marshall is incorrect in his assertion that it appears to range practically throughout India: our selected series of seventy-four specimens does not include one example from Eastern India. This makes it all the more probable that Mr. Marshall's inconsistent action in regarding the Ceylonese *T. limbatus* as a variety of *T. etrida*, whilst he regarded *T. danae* as quite distinct from the company to which he gave the name of *T. eupompe*, was an error. Just as *T. danae* differs from *T. dulcis*, so does *T. limbatus* differ from *T. etrida*, whilst the latter has the additional advantage of being a purely insular form.

Of the varieties of *T. etrida* to which I gave distinctive names, *T. farrinus* is the most heavily marked on the upper surface, though *T. pernotatus* runs it very close; *T. purus* is a dwarf form of the species with rather more orange at apex than in typical *T. etrida*. These are all wet-season or intermediate forms. The dry-season phase is represented by *T. casimirus* and the starved form of it which I described under the name of *T. bimbura*.

35. *Teracolus limbatus*.

Teracolus limbatus, Butler, P. Z. S. 1876, p. 161.

Ceylon.

The males of this species are always heavily bordered, and sometimes so much so that the marginal spots are perfectly confluent throughout; the species seems never to attain to the size of the largest examples of *T. etrida*. The female on the upper surface (like its male) resembles most nearly that sex of *T. etrida*, var. *farrinus*, but is more heavily bordered, shows scarcely a trace of the spot on the interno-median area of primaries, has brown instead of black markings on the under surface of these wings, and the discal markings on the secondaries very ill-defined. An example of this sex is in the Hewitson collection.

36. *Teracolus ephyia*.

Pontia ephyia, Klug, Symb. Phys. pl. vi. figs. 9, 10 (1829).

Occurs from Ambukol in Nubia northward to Upper Egypt.

The wet-season form of the male nearly resembles the male of typical *T. etrida* on the upper surface, but the female shows no trace of the interno-median spot of that species, whilst on the under surface all the discal spots are wanting. The dry-season form is smaller, shows scarcely a trace of the black inner edging to the orange subapical patch; the secondaries also have no marginal spots and the under surface is suffused with buff.

Mr. Marshall was quite correct as to the females formerly associated by me with this insect having nothing to do with it, but he should also have discovered how closely allied it is both to *T. etrida* and *T. lais*.

37. *Teracolus lais*.

Teracolus lais, Butler, P. Z. S. 1876, p. 145.

Teracolus halyattes, Butler, t. c. pl. vi. fig. 8, ♂.

Teracolus lycoris ♀, Butler, t. c. p. 140, pl. vi. fig. 6, ♀.

Ranges from Kimberley across the Orange Free State to Swaziland.

The female of *T. lais*, the wet- (not dry-) season form, bears a vague resemblance to that of *T. etrida*, var. *bimbura*, but the orange subapical bar has no inner blackish edging and there is no spot on the second median areole of primaries, the two marginal spots nearest to apex of secondaries are also confluent; on the under surface the basal area and apical border of primaries and the secondaries, with the exception of a discal patch towards apex, are washed with pale buff; the orange subapical curved bar of the primaries is paler than above, but the interno-median black spot is distinct. The males vary greatly in expanse, the type measuring about 34 millim., and a second example from the Godman and Salvin collection no less than 46. It approaches *T. ephyia*, but has more nearly the upper-surface pattern of *T. bimbura*, with pure white under surface (indistinctly irrorated with black scales when examined through a lens), the discocellular dots black, that of the secondaries attached to an orange spot; the costa of these wings is also narrowly orange towards the base.

My incorrect identification of the sexes of the dry-season form (*T. halyattes*) led Mr. Marshall into error. The male of the latter is much like the wet-season form above, but both

sexes below are alike, with grey-speckled rosy apical area to primaries and rosy secondaries, showing traces of an angular discal series of dusky spots, one or two of which are more or less prominent on the upper surface of the female; the apical patch in this sex is dark brown, with a curved subapical series of indistinct orange spots.

38. *Teracolus pallene*.

Anthocharis pallene, Hopffer, Peters's Reise, p. 358, pl. xxiii. figs. 7, 8 (1862).

Callosune pseudeletrida, Westwood, in Oates's Matabeleland, p. 340 (1881).

Teracolus cinctus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

I believe that these are synonymous, although the description of the under surface of Westwood's type does not correspond in every detail with that of *T. cinctus*, and the female is described as having a subapical yellow fascia, whilst the female of *T. cinctus* has the apical area black, crossed by ill-defined narrow ochreous dashes. Still I believe that variation may account for these discrepancies. One thing is certain, Westwood's insect must belong to the *T. दौरα* group, and not to the singular mixed community in which Mr. Marshall has placed it, for it undoubtedly has the orange apical patch of the male black-bordered internally. Assuming that the above synonymy is correct, the species must be intermediate between *T. lais* and *T. infumatus*, and must range from the Victoria Nyanza southward to Nyasaland, and thence to Tete on the Zambesi. The intermediate form has the under surface washed with warm buff, and the dry-season form is small, with narrower black borders, the black internal streak ill-defined, and the secondaries rosy on the underside.

39. *Teracolus infumatus*.

Teracolus infumatus, Butler, P. Z. S. 1896, p. 128, pl. vi. figs. 5, 6.

Ranges from the Victoria Nyanza due south to Nyasa.

This species in its wet-season form is like a large and very heavily marked form of *T. pallene*, to which it is undoubtedly allied; but the intermediate-season form (of which we have a male from Lake Tanganyika) has the apical patch of orange more extended on the costa and not bordered internally by a black bar. This fact brings the species somewhat nearer to the *T. दौरα* group, in which the dry-season form has a similar character.

40. *Teracolus दौरا*.

Pontia दौरا, Klug, Symb. Phys. pl. viii. figs. 1-4 (1829).

Anthocharis noua, Lucas, Expl. Alg., Zool. iii. p. 350, pl. i. fig. 2 (1849).

Anthopsyche demagore, Felder, Reise der Nov., Lep. p. 186 (1865).

Anthopsyche dalila, Felder, Reise der Nov., Lep. p. 188 (1865).

Teracolus xanthus ♀, Swinhoe, P. Z. S. 1884, p. 440, pl. xxxix. fig. 11.

Teracolus odysseus ♂, Swinhoe, t. c. p. 441, pl. xl. fig. 3.

Appears to range from Algeria to Egypt and thence southwards to Abyssinia and Somaliland.

The type of Felder's *T. dalila* is identical with the typical wet-season form, *T. odysseus* is an intermediate form, and *T. noua* (of which *T. demagore* is a synonym) is the dry-season form. The latter, owing to its resemblance in the male sex to the dry-season forms of two other allied species, has been united to them and placed in the next group of species by Mr. Marshall, the whole being united under one heading as what he elegantly calls a "job lot."

41. *Teracolus stygia*.

♂. *Anthopsyche stygia*, Felder, Reise der Nov., Lep. p. 188 (1865).

Bogos, N.E. Africa.

This is an intermediate-season form, perhaps not distinct from *T. odysseus*, which it nearly resembles; it is, however, larger and differs slightly in some details of its pattern. The type, which I have examined, is in the collection of the Hon. Walter Rothschild.

42. *Teracolus Heuglini*.

Anthopsyche Heuglini, Felder, Wien. ent. Monatschr. iii. p. 272 (1859).

Teracolus Thruppi, Butler, P. Z. S. 1885, p. 770, pl. xlvii. fig. 10.

Teracolus Jamesi, Butler, t. c. p. 771.

Teracolus Jacksoni, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 336 (1890).

From Somaliland southwards to the Sabaki valley.

T. Jacksoni is the wet-season form, *T. Thruppi* the intermediate form, and *T. Heuglini* (= *D. Jamesi* ♂) the dry-season form.

43. *Teracolus evagore*.

Pontia evagore, Klug, Symb. Phys., Ins. pl. viii. figs. 5, 6 (1829).

Teracolus Yerburii, Swinhoe, P. Z. S. 1884, p. 441, pl. xxxix. fig. 12.

Teracolus sareus, Swinhoe, t. c. pl. xl. figs. 1, 2.

Teracolus Swinhoei, Butler, t. c. p. 491.

Arabia.

T. Yerburii is the wet-season form, *T. Swinhoei* may be

taken as either a yellow variety or an intermediate type, and *T. evagore* (= *saxeus*) is the dry-season form. Practically the whole of the forms are dry-season, but they represent the seasonal phases which occur in more variable climates. That *T. evagore* is the dry-season phase of *T. Yerburi* (and consequently *T. Heuglini* of *T. Thruppi*, and *T. nouna* of *T. daira*) is evident from the fact recorded (P. Z. S. 1896, p. 247) that one pupa produced from a batch of larvæ bred by Capt. Nurse produced *T. evagore** and all the others *T. Yerburi*.

44. *Teracolus Emini*.

♂. *Teracolus Emini*, Butler, Ann. & Mag. Nat. Hist. ser. 6, vol. vii. p. 47 (1891).

Ranges from Abyssinia to the Albert Nyanza, thence southwards through Nyasaland to Delagoa Bay, whilst we have one male of the dry-season form from the Godman and Salvin collection which is said to have been obtained as far south as Graham's Town.

But for the fact that the dry-season form of this species exactly resembles that of the wet-season on the upper surface, I should not have hesitated to regard it as an exaggerated development of the closely allied *T. eione*. The latter, however, appears to be strictly confined to Southern Africa.

45. *Teracolus eione*.

Anthocharis eione, Boisduval, Sp. Gén. Lép. i. p. 578 (1836).
Teracolus galathinus, Butler, P. Z. S. 1876, p. 142.

Ranges from the Cape to Delagoa Bay.

The wet and intermediate forms of this species are much alike on the upper surface, the latter, however, with ochraceous apex to primaries and entire surface of secondaries below, whilst the dry-season form is much more lightly marked above, more rosy and irrorated with brown below; next to *T. Emini* it is the most heavily marked dry-season form of its group, and notwithstanding its general resemblance on the upper surface to the wet-season forms of *T. phlegetonia*, I do not consider that we have enough evidence to sink it with its widely differing wet phase as a mere variation of *T. phlegetonia*. When it can be *proved* (instead of *asserted* without proof) that *T. Emini*, *T. eione*, *T. antigone*, *T. xanthus*, *T. interruptus*, and *T. glycera* are only variations (uninfluenced by locality or climate) of one and the same species, I shall be one of the first to accept the position. At present I regard it as extremely improbable.

* He calls it *nouna*, but that is a mere trifling misidentification.

46. *Teracolus antigone*.

- Anthocharis antigone*, Boisduval, Sp. Gén. Léop. i. p. 572 (1836).
Anthocharis phlegetonia, Boisduval, l. c. p. 576 (1836).
Anthocharis delphine, Boisduval, l. c. p. 577 (1836).
Teracolus subfumosus, Butler, P. Z. S. 1876, p. 139, pl. vi. fig. 3.
Teracolus flaminia, Butler, t. c. p. 140, pl. vi. fig. 1.
Teracolus lycoris, Butler, *ibid.* (but not pl. vi. fig. 6).
Teracolus lycæus, Butler, t. c. p. 141, pl. vi. fig. 2.
Teracolus friga, Butler, t. c. p. 142, pl. vi. fig. 5.
Teracolus minans, Butler, Ent. Month. Mag. xviii. p. 229 (1882).
Teracolus coniger, Butler, *ibid.*

Ranges from Accra eastwards to the Albert Nyanza and thence southwards to Cape Colony.

When I described the above forms as distinct we had no examples of the very distinct wet-season phases from the south, nor was I aware of the variability or the seasonal distinctions which occur in *Teracolus*; therefore when I found half a dozen or more examples which seemed to correspond in the possession of certain characters in both sexes, I naturally supposed that I had different species before me. The Godman and Salvin collection, which was tolerably rich in examples of this species, has enriched our series, adding eight typical examples of *T. phlegetonia* (wet-season) from the Cape of Good Hope, also five examples of the variety *T. minans*=*coniger* from the Cape, as well as seven examples of the dry-season variety *T. delphine*. With our present series I am satisfied that the above synonyms represent one tolerably variable species. I cannot, however, believe that *T. antigone*, the wet-season form of which always has both the base and apex of the primaries bright lemon-yellow on the under surface, and which has a much narrower internal black stripe in all its forms, is identical with *T. eione* or *T. Emini*. Typical *T. antigone* has no internal stripe. Of the named forms, *T. phlegetonia* and *T. minans* are wet-season phases, *T. friga* is intermediate, and the remainder are variations of the dry-season form.

47. *Teracolus glycera*.

♂. *Teracolus glycera*, Butler, P. Z. S. 1876, p. 144.

Exact locality unknown. Type B. M.

It is possible that this may prove to be an aberrant intermediate-season form of *T. antigone*, for, although the inner margin of the orange apical patch is unbroken by the usual black marking, the primaries have the same yellow basal suffusion, and the other characters nearly correspond with those of that species.

48. *Teracolus xanthus*.

- ♂. *Teracolus xanthus*, Swinhoe, P. Z. S. 1884, p. 440, pl. xxxix. fig. 10.
Teracolus comptus, Butler, P. Z. S. 1888, p. 94.
Teracolus bifasciatus, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6,
 vol. v. p. 336; ♀, Waterhouse, Aid, pl. clxxxix. (1890).

Ranges from Upper Egypt southwards to the Victoria Nyanza and Kilima-njaro, and thence to Nyasaland.

This is a northern and eastern development of *T. antigone*, usually smaller and more weakly marked on both surfaces, especially in the wet-season form. Only the more heavily marked examples of this form show any trace of the yellow basal suffusion on the under surface. At the same time it is possible that where the two forms meet they may interbreed, as is the case with some of the local races of birds.

49. *Teracolus metagone*.

- Teracolus metagone*, Holland, Proc. U.S. Nat. Mus. vol. xviii. p. 760 (1896).

East Africa.

This is a wet-season or intermediate form apparently nearly approaching *T. xanthus*, var. *bifasciatus* (= *comptus*); but without examining either a good figure or a typical example it would be rash to assert its identity with that species. It must, however, be borne in mind that the internal fascia on the primaries which occurs in the type specimens both of *T. bifasciatus* and *comptus* and the small transverse spot near the posterior extremity of the orange apical patch are not constant characters, but grade away to nothing even in our series.

50. *Teracolus interruptus*.

- Teracolus interruptus*, Butler, P. Z. S. 1871, p. 724; Lep. Exot. p. 115, pl. xliii. figs. 1, 2 (1872).
Teracolus lucullus, Butler, P. Z. S. 1876, p. 143, pl. vi. fig. 4.
Teracolus gelusinus, Butler, t. c. p. 143.

Appears to be confined to Angola and the neighbourhood of the Congo near its mouth. It is readily distinguished from the more northerly West-African type *T. antigone* by the absence of lemon-yellow at the base of the primaries below in any of its phases; the black internal bar is very faintly indicated in the wet-season form and wanting in the intermediate and dry forms.

51. *Teracolus agoye*.

Anthopsyche agoye, Wallengren, Lep. Rhop. Caffr. p. 15 (1857).

Anthocharis eosphorus, Trimen, Trans. Ent. Soc. ser. 3, vol. i. p. 523 (1863).

Teracolus Bowkeri, Trimen, *op. cit.* 1883, p. 358.

Teracolus zephyrus, Marshall, P. Z. S. 1897, p. 8.

South Africa.

I have carefully compared the various descriptions of this species with our examples, and have utterly failed to discover any reason for keeping them separate. Three examples from the Godman and Salvin collection of the wet-season phase obtained at Kimberley (two males and one female) agree remarkably well with Mr. Marshall's description: one worn and damaged male example in our series and one in the Hewitson collection of the intermediate phase, having the apex of primaries and the secondaries beneath creamy yellowish, are somewhat larger, with the black inner bordering of the apical patch continued almost to the first median branch; these are from Damaraland, and therefore should represent *T. agoye* = *eosphorus*; whilst a male in the Hewitson collection of the dry-season phase from the Transvaal has all the veins finely blackened above, the apical patch intermediate in size, with only its upper half black-bordered, its outer portion irrorated with greyish lavender, the apex of primaries and the secondaries below rose-pink. But for the comparative rarity of *T. agoye*, I am certain that Mr. Marshall would not have been so inconsistent as to regard the very slight characters upon which he has separated it into three species as either likely to be constant or of the least importance. There are hardly any of the forms which he has associated under his *T. evagore*, *T. evippe*, and *T. achine* which do not differ more markedly from one another. He himself says of specimens which he calls *T. achine*: "The undersides are equally variable, ranging from the type with black neuration to a specimen in which there is no trace of black"; and, under his *T. phlegyas*: "the development of the black on neuration is such an eminently unreliable character in this genus." It is perfectly well known also that the width of the black inner edging of the apical patch and the black costal streak on the secondaries are far less reliable, that the white or creamy under surface is dependent upon season, and that the discocellular dots are most inconstant. What characters then remain?

52. *Teracolus niveus*.

Teracolus niveus, Butler, P. Z. S. 1881, p. 177, pl. xviii. fig. 1.

Teracolus candidus, Butler, t. c. p. 178, pl. xviii. fig. 2.

Socotra.

T. niveus represents the wet-season phase and *T. candidus* that of the dry-season; the latter is less heavily marked than the type, and the orange patch, instead of filling the apex of the primaries, is represented by an oblique pale orange sub-apical band of five spots, widest in the middle and narrowest at its lowest extremity.

53. *Teracolus aldabrensis*.

Teracolus aldabrensis, Holland, Proc. U.S. Nat. Mus. vol. xviii. p. 269, pl. viii. figs. 7, 8 (1895).

Aldabra.

This is a very distinct and singularly coloured species. Without seeing the type, I should judge that its nearest relation was probably my *T. niveus*, from Socotra. It appears to be a wet-season form.

54. *Teracolus evenina*.

Anthopsyche evenina, Wallengren, Lep. Rhop. Caffr. p. 12 (1857).

Anthopsyche deidamia, Wallengren, Wien. ent. Monatschr. iv. p. 35 (1860).

Callosune deidamioides, Aurivillius, Kongl. Svensk. Vet.-Akad. Förh. 1879, p. 45.

Callosune inornata, Westwood, in Oates's Matabeleland, p. 338 (1881).

Southern Africa as far west as Damaraland, eastwards as far as the Zambesi.

The seasonal forms of this species differ but little on the upper surface; the dry-season male, however, has slightly less black on the inner margin and on the inner edge of the orange apical patch. *C. deidamioides* is the dry-season form.

55. *Teracolus casta*.

♂. *Callosune casta*, Gerstaecker, Arch. für Nat. 1871, i. p. 357; Van der Decken's Reisen in Ost-Africa, iv. 2, p. 365, pl. xv. figs. 1, 1 a (1873).

♂. *Teracolus sipylus*, Swinhoe, P. Z. S. 1884, p. 444, pl. xl. figs. 10, 11. *Teracolus callidia*, Grose Smith, Ent. Month. Mag. xxiii. p. 32 (1886).

Ranges from Zanzibar south-westwards to Nyasaland and north-westwards to the Victoria Nyanza.

The seasonal variation of this species is considerably more marked than in the southern *T. evenina*; *T. sipylus*, the

extreme wet-season form, is usually distinctly larger than the wet-season form of *T. evenina*, and always has all the dark markings much heavier, the black marginal spots of the secondaries being connected by grey scaling into a continuous or partly confluent border and frequently preceded by a lunulated greyish submarginal stripe. Even Mr. Trimen, who states that the two species are inseparable, is constrained to admit that *T. sipylus* is "somewhat more heavily marked." *T. callidia* chiefly differs from the latter in having the secondaries below "brownish-white," and is probably an intermediate phase between the wet- and dry-season forms; the dry-season form is *T. casta*, which is far more lightly marked than any South-African example of *T. evenina*. It is true that in Gerstaecker's figure and in our single example the male has a white under surface; but this is often the case with individuals of the dry-season phase in other species of the genus, as, for instance, in those examples of *T. dedecora* (the dry-season form of *T. eupompe*) to which Felder gave the name of *T. theopompe*.

Did intergrades between *T. evenina* and *T. casta* exist, one would be bound to regard them as one species; but the supposed intergrades prove to be nothing of the kind when examined with a view to seasonal variation, and the two species remain as representative localized forms.

56. *Teracolus Carteri*.

Teracolus Carteri, Butler, Ent. Month. Mag. xviii. p. 227 (1882).

Teracolus laura, E. M. Sharpe, Ann. & Mag. Nat. Hist. ser. 6, vol. v. p. 441 (1890).

Ranges along the West Coast of Africa from Senegambia to Accra, and thence across the continent eastwards to the Albert Nyanza.

Of this species I have only seen wet and intermediate phases. If a dry-season form occurs it should be looked for in Central Africa. Both types of the species belong to the wet-season form.

This may be regarded as a heavily marked development of the more widely distributed *T. isaura*, like which species it has the basal suffusion softly diffused, instead of almost uniform in tone with the blackish internal spot on the primaries. The wet-season form, however, is much larger than *T. isaura*, much more heavily bordered with black in both sexes, and with a black inner edging to the apical orange patch in the male. The intermediate form is as heavily bordered as the wet phase of *T. isaura*, whilst both wet and intermediate forms have the wings on the under surface

heavily black-veined below, a character extremely rare in *T. isaura*.

57. *Teracolus isaura*.

Anthocharis isaura, Lucas, Rev. et Mag. de Zool. p. 424 (1852).

Teracolus helle, Butler, P. Z. S. 1876, p. 149.

North Africa, from Upper Egypt to the White Nile and Abyssinia.

This species, regarded as a whole, is smaller and less heavily black-bordered than *T. Carteri*; the wet-season form has the veins below tipped with black, but it is most unusual even for the female to have them wholly blackened; the orange apical patch on the under surface of the primaries is much smaller and more diffused, and the orange markings on the secondaries are usually weaker. Both types belong to the wet-season phase, from which the intermediate form only differs in its more feeble black bordering, and on the under-side in the less pronounced black tips to the veins; the dry form is still more weakly marked, without any black tips to the veins in the male, the female below being suffused with buffish salmon; it is possible that the male may sometimes have a rosy tinge below, but our examples do not show this dry-season character (which is not invariable).

58. *Teracolus antevippe*.

Anthocharis antevippe, Boisduval, Sp. Gén. Lép. i. p. 572 (1836).

Anthocharis zera, Lucas, Rev. et Mag. de Zool. p. 423 (1852).

Teracolus subvenosus, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

Ranges from Senegal (where it appears to be rare) across the continent (to Abyssinia*, according to Lucas), south-eastwards to the Albert Nyanza, the Victoria Nyanza, Kilimanjaro, and thence still eastwards to Zanzibar.

Although related to *T. isaura*, this species appears to me to hold its own; it is much more variable than *T. isaura*, frequently showing a black internal stripe on the upper surface of the primaries and an imperfect black inner edging to the orange apical patch: the female in all its phases is much more heavily marked with blackish basal clouding and still blacker internal stripe on the primaries; the borders and subapical bar are also blacker than is usual in *T. isaura*, and the angular band on the secondaries more strongly defined; the veins on the under surface of the wings are either black

* I believe, however, that Lucas confounded with it the males of *T. helle* (the dry-season form of *T. isaura*).

externally (*T. subvenosus*), but never connected with a black marginal line as in *T. isaura*, or are merely dusky towards the tips (*T. antevippe*): the dry-season form (*T. zera*) has the under surface suffused with creamy pink, and is the least heavily marked type on the upper surface.

Strictly speaking, the males of this species, without any trace of the blackish internal stripe on the upper surface (typical *T. antevippe*), should perhaps be regarded as an intermediate phase between the wet- and dry-season forms, the wet form being represented by *T. subvenosus*.

59. *Teracolus ithonus*.

Teracolus halyattes ♀, Butler, P. Z. S. 1876, p. 145, pl. vi. fig. 8 (part.).

Teracolus ithonus, Butler, t. c. p. 146, pl. vi. fig. 7.

Teracolus harmonides, Butler, t. c. p. 146.

Teracolus hippocrene, Butler, t. c. p. 147.

Teracolus ignifer, Butler, *ibid.*

Teracolus hyperides, Butler, t. c. p. 149.

Teracolus hero ♂, Butler, t. c. p. 150, pl. vi. fig. 12 (part.).

Callosune damarensis, Aurivillius, Öfv. Ak. Förh. xxxvi. 7, p. 46 (1879).

Callosune Haevernickii, Standinger, Exot. Schmett. p. 45, pl. xxiii. (1884).

Ranges from Kaffraria to Swaziland.

This may be regarded as the Southern representative of *T. antevippe*. It is much less heavily marked with black above, and, excepting in the male of the wet-season form (*T. hero* ♂), is more or less densely irrorated with brown scales on the under surface; even in this form the internal streak of the primaries and costal streak of the secondaries are incomplete. Two forms of all the phases occur, those of the wet and intermediate phases chiefly differing in size, having the under surface of the secondaries white, densely irrorated with brown; those of the dry-season form, however, are less alike; the larger form (*T. ignifer* = *damarensis*) has the under surface of the secondaries and apex of primaries rose-pink, finely irrorated with greyish brown in the males, somewhat more sandy in colouring, with the usual transverse banding in the females, the smaller form (*T. ithonus* = *harmonides* = *Haevernickii*) differing from the latter in the deeper more sandy colouring of the under surface, with coarse transverse striation rather than irroration. The forms may be summarized as follows:—

Wet-season.	Intermediate.	Dry.
<i>T. hero</i> (large).	Unnamed (large).	<i>T. ignifer</i> (large).
<i>T. hippocrene</i> .	<i>T. hyperides</i> ♀ (small).	<i>T. ithonus</i> (small).
Syn. <i>hyperides</i> ♂ (small).		<i>T. harmonides</i> (starved).

The female wrongly referred to *T. halyattes* is referable to typical *T. ithonus* (the smaller dry-season form).

60. *Teracolus achine*.

Papilio achine, Cramer, Pap. Exot. iv. pl. cccxxxviii. E, F (1782).
Teracolus simplex, Butler, P. Z. S. 1876, p. 148.

Ranges from the Cape to Natal, the Transvaal, and apparently northward as far as Nyasaland.

The wet and intermediate forms of this species have a well-defined internal stripe on the upper surface of the primaries; the apical patch in all the phases is bright vermilion, with a crimson tinge, but on the under surface the subapical orange bar is weak and diffused; in the intermediate and dry-season forms the under surface of the secondaries is irrorated and striated with grey upon a pale pink ground; the dry-season form (*T. simplex*) differs in having no internal blackish stripe on the primaries and no costal stripe on the secondaries of the male, and in the feebleness of all the other blackish markings on the upper surface.

Subspecies *Teracolus Trimeni*.

Teracolus Trimeni, Butler, P. Z. S. 1876, p. 150.

Callosome ramaquebana, Westwood, in Oates's Matabeleland, p. 341, pl. E. figs. 5, 6 (1881).

Teracolus fumidus, Swinhoe, P. Z. S. 1884, p. 442, pl. xl. figs. 4, 5.

A representative form of *T. achine* apparently confined to the Eastern side of Africa from the Transvaal northward as far as Manboia. The typical (wet-season) form is generally more heavily marked above with black than in *T. achine*, the male even sometimes showing traces of the angular black band on the secondaries characteristic of the female; on the under surface also, which is more creamy in tint than in *T. achine*, this angular band is sometimes indicated in saffron-yellow. *T. fumidus* (of which *T. ramaquebana* is the female) is merely a starved form of the subspecies. The dry-season form is less strongly marked than in that phase of *T. achine*, and is characterized by the usual rosy coloration on the under surface. Of our eighteen examples of this subspecies no less than sixteen were obtained in the Transvaal, nine of which were received in the Godman and Salvin collection.

T. ramaquebana, curiously enough, is referred by Mr. Guy A. K. Marshall to the synonymy of his heterogeneous "*T. evagore*," one of the most singular combinations of dry- and wet-season forms, of species belonging to widely different sections of the genus, which have been associated together

since the days of Hewitson! It only shows how utterly impossible it is to write a correct synonymic paper upon any genus without first arranging the species, having due regard at the same time not only to seasonal variation, but to geographical distribution. Never since I first arranged the genus was it in such a perplexing state of chaos as during Mr. Marshall's few visits to it with a view to "clearing up" the synonymy. The natural result is that the "clearing up" has resulted in partial failure.

61. *Teracolus gavisa*.

Anthopsyche gavisa, Wallengren, Lep. Rhop. Caffr. p. 13 (1857).

Teracolus hero ♀, Butler, P. Z. S. 1876, p. 150, pl. vi. fig. 12 (part.).

Teracolus subvenosus ♀, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xii. p. 105 (1883).

Ranges from Natal to the Victoria Nyanza along the eastern littoral.

This species differs from *T. achine* in its much bolder marking in all its seasonal phases, the reduction of the crimson apical patch on the primaries of the males, and the well-defined black veining on the under surface of the wet-season form. "*T. subvenosus* ♀" is a typical female of *T. gavisa*, but "*T. hero* ♀" a singularly heavily marked and buff-tinted female of the intermediate phase.

I should regard *T. gavisa* as at least subspecifically distinct from *T. achine*, at any rate until it has been proved by breeding to be a mere varietal development of that species. It can always be easily distinguished in all its phases.

62. *Teracolus omphale*.

Pieris omphale, Godart, Enc. Méth. ix. p. 122 (1819).

Anthocharis theogone, Boisduval, Spec. Gén. Léop. i. p. 575 (1836).

Anthopsyche procne, Wallengren, Lep. Rhop. Caffr. p. 323 (1857).

Teracolus omphaloides, Butler, P. Z. S. 1876, p. 151.

Teracolus corda, Möschler, Verh. zool.-bot. Ges. Wien, xxxiii. p. 278 (1884).

Teracolus complexivus, Butler, P. Z. S. 1885, p. 770.

Ranges along the eastern side of Africa from Somaliland to the Cape.

T. omphale is a very variable species, the most heavily marked of the wet-season forms occurring in Nyasaland, where the marginal spots on the upper surface of the secondaries frequently unite into a broad continuous border; the discal black belt on these wings in the male varies enormously, sometimes broad from abdominal margin to outer border, sometimes slender, sometimes barely indicated. In the inter-

mediate phase (*T. omphaloides*=*complexivus*), which has a dry-season under surface, the discal black belt is either barely indicated or wholly absent. *T. corda* is merely a starved variety of the male of this phase. *T. theogone*=*procne* is the extreme dry-season form, in which the black discal belt of the male has wholly disappeared and the internal stripe on the primaries nearly so, whilst the female is much less heavily marked than in the wet-season, and is sometimes yellow, flushed with orange above; the under surface of the dry-season form is very rosy and irrorated with clay-brown.

63. *Teracolus exole*.

Anthocharis exole ♂, Reiche, Ferr. & Gal. Voy. Abyss. pl. xxxi. fig. 4 (1849).

Anthocharis eurygone (?), Lucas, Rev. et Mag. de Zool. 1852, p. 341.

Anthopsyche acte, Felder, Reise der Nov., Lép. p. 187 (1865).

Anthopsyche roxane, Felder, *l. c.*

Teracolus hybridus, Butler, P. Z. S. 1876, p. 152.

Ranges down the east coast from the Sabaki valley to the Cape.

It is perhaps only an emphasized form of *T. omphale*, from which it chiefly differs in the greater development of black on the upper surface, even the dry-season phase having a distinctly wet-season pattern above. The female figured by Reiche as that sex of *T. exole* is *T. antevippe*. *T. acte* of Felder is the true female (wet-season form), *T. roxane* is a female of the intermediate phase, and *T. hybridus*, which Mr. Marshall places as an intermediate phase of *T. evippe*, is the dry-season form. *A. eurygone* answers best to the wet-season form of *T. exole*, but the locality "Coast of Guinea" is rather against this identification.

64. *Teracolus pyrropterus*.

Teracolus pyrropterus, Butler, P. Z. S. 1894, p. 575, pl. xxxvi. figs. 8, 9.

Apparently confined to the vicinity of Mount Kenya: two specimens (the types) not being ticketed with exact locality, I supposed them to be from the Sabaki valley; the same was the case with three examples of the wet-season form, but others are labelled Thegu and Thagana. Guaso Thegu is a gorge to the west of Mount Kenya, and Thagana appears not to be far off.

The wet-season form of this butterfly resembles small and lightly marked examples of *T. omphale* on the upper surface, but below it inclines to pink rather than cream-colour in tint, and this is especially the case with the discal stripe on the

secondaries, whilst the subapical patch on the primaries is bright brick-red, as in the brightest examples of *T. theogone* (the dry-season form of *T. omphale*). The intermediate phase has the black banding of the upper surface still weaker, and below the subapical patch on the primaries and the discal stripe across the secondaries are sharply defined and very vivid upon a creamy ground-tint; the fringes rosy: the (typical) dry-season form retains the black internal stripe on the primaries, which is absent in males of *T. theogone*, and still shows a trace of the discal stripe on the secondaries; the apex of primaries and the secondaries below are bright rosy, the former with diffused bright brick-red subapical patch, the latter with the discal stripe varying from brick-red to gravel-brown.

I cannot agree at all to Mr. Marshall's arbitrary decision that this localized form is inseparable from *T. omphale*, no examples of which that I have ever seen in the slightest degree resemble its dry-season phase. That *T. pyrrhopterus* and *T. omphale* had a common origin will not be disputed, but that they are now distinct I firmly believe.

65. *Teracolus evippe*.

Papilio evippe, Linnæus, Mus. Lud. Ulr. p. 239 (1764).

Papilio arethusa, Drury, Ill. Exot. Ent. ii. pl. xix. figs. 5, 6 (1773).

Papilio eborca, Cramer, Pap. Exot. iv. pl. cccxii. figs. C, D (1782).

Papilio hanna, Herbst, Natursyst. Schmett. pl. cvii. figs. 5, 6 (1792).

Pieris amyntis, Godart, Enc. Méth. ix. p. 123 (1819).

Anthocharis cebrene, Boisduval, Sp. Gén. Léop. i. p. 583 (1836).

Teracolus pseudocale, Butler, P. Z. S. 1876, p. 154, pl. vi. fig. 9.

On the west of Africa this species ranges from Sierra Leone to Old Calabar and the Cameroon Mountains; it reappears at the Cape, and extends up the east side of Africa as far as Natal. We have one almost typical example from the West Coast as far south as Loanda; therefore, although the species is represented in S.W. Africa by *T. ocale*, the latter can hardly be regarded as more than a climatic race. On the other hand, the northern *T. epigone* appears to be geographically separated from *T. evippe*, and, though nearly allied, must be regarded as a distinct species. *T. pseudocale* is a starved southern variety of the wet-season phase.

The females of the typical wet-season *T. evippe* vary considerably in ground-tint and in the character of the apical patch; the rarest form of the female is that which most nearly approaches the south-western race, with white ground-tint and the black apical patch of the primaries enclosing a clear orange arched band; a second less rare form has this band

much reduced and less clear; then comes the *arethusa* of Drury (which has received the names of *eborea* (part.), *hanua*, *amytis*, and *cebrenae*), in which the orange has almost disappeared from the apical patch; the remaining varieties agree with the latter in character, but are sulphur-yellow or bright ochre-yellow in ground-colour.

Race *Teracolus ocale*.

Anthocharis ocale, Boisduval, Sp. Gén. Lép. i. p. 584 (1836).

Teracolus loandicus, Butler, P. Z. S. 1871, p. 724; Lep. Exot. p. 91, pl. xxxiv. fig. 10 (1872).

Teracolus suffusus, Butler, P. Z. S. 1876, p. 152, pl. vi. fig. 10.

Teracolus angolensis, Butler, P. Z. S. 1876, p. 154.

Occurs along the S.W. coast in the neighbourhood of Angola, and possibly further south.

The wet-season form of this race most nearly resembles *T. evippe*, var. *pseudocale*, but the female seems always to have the apical patch divided by a clear and often broad orange belt. *T. suffusus* was based upon an unusually dark and dwarfed example of the female. Wet, intermediate, and dry phases are all much alike on the upper surface, the dry form alone having much less black on the inner edge of the orange apical patch, giving it a totally different aspect from the southern dry phase of typical *T. evippe*, which has a fairly well-marked continuous black inner edging to the apical patch of the male; it is, however, possible that intergrades may occur between the two extremes. There appears to be no dry phase to *T. evippe* at or near Sierra Leone.

66. *Teracolus epigone*.

Anthopsyche epigone, Felder, Reise der Nov., Lep. p. 186 (1865).

Teracolus microcale, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. xviii. p. 487 (1876).

Ranges from Upper Egypt to the White Nile and Abyssinia, and occurs also near Aden.

This species nearly resembles the Angolan *T. ocale* in all its phases, but the male always has a well-defined black inner border to the orange apical patch on the primaries, whereas the female is less prominently marked above with black than in any form of *T. evippe*, the spot which terminates the internal blackish streak on the primaries being wholly absent, and even the basal blackish irroration being either much restricted or wanting. At the same time, if it could be shown that *T. evippe* extended across Africa northwards from the West Coast, I should be inclined to regard *T. epigone* as a mere climatic race; but there seems to be no evidence what-

ever upon which to base such a decision, and therefore, in spite of its affinity to the Angolan race of *T. evippe*, I am constrained to consider it a distinct species.

The argument on which Mr. Marshall bases his synonymy of *T. evippe* and *T. omphale*, which he regards as one variable species, is based upon the confusion which existed previous to its rearrangement in the drawers of those species in the Museum collection—a confusion largely due to the incorporation of accessions since the date of the first arrangement of the genus about the year 1876 or 1877. He says that in Eastern Africa *T. evippe* is “an intermediate seasonal form of *theogone-omphale*”; but this is certainly not the case, for *T. evippe* is essentially, in all its characters, a wet-season phase; nor does it appear to extend in the East further north than Natal.

[To be continued.]

LIV.—*Phenomena of Autotomy observed in the Nymphs of Monandroptera inuncans, Serv., and Rhaphiderus scabrosus, Serv.* By EDMOND BORDAGE*.

IN the month of September last year I succeeded in obtaining larvæ and nymphs of *Monandroptera inuncans* and *Rhaphiderus scabrosus*, in which I studied the phenomena of autotomy, in order to compare them with those that I had observed in the case of the adult insects.

These phenomena were exhibited very clearly by the very young larvæ. On pinching hard the distal extremity of the femur, I generally produced the separation of the limb. The interval that elapses between the stimulation of the nerve and the rupture of the limb varies from a few tenths of a second to three or four seconds. The same operation could be attempted successfully upon all six limbs.

In the case of the older larvæ and nymphs autotomy is sometimes produced still more easily; but it may happen that it becomes irregular and capricious—a feature that we have already pointed out in the adult Phasmids. We must also make mention of the increase in the time between the stimulus and the rupture. Although this increase is not manifested in an absolutely universal manner, it is of very

* From the ‘Comptes Rendus, t. cxxiv. no. 4 (Jan. 25, 1897), pp. 210–212: from a separate impression communicated by the Author.